IV. Undergraduate Research

For a course to be designated as "Undergraduate Research", satisfying the University Engaged Learning requirement, it must meet all the criteria below:

Criteria for undergraduate research courses are based on research, best practices, and the CAS Standards for Undergraduate Research (2009)

1. The field research course engages students on an original research project (not a simulation), either contributing to a faculty research project or engaging in an independent research project with a mentor.

2. Students conduct research on an ongoing basis, working an average of 5 – 10 hours/week.

3. Students gain knowledge of or experience in discipline-specific language, research ethics, skills in research methodologies, and important scholarship.

4. The learning objectives related to the research experience are clearly articulated related to their field of study, educational goals and/or career and vocational aspirations.

5. There is supervision and feedback by a mentor who has expertise related to their field of study, educational goals and/or career and vocational aspirations.

6. The syllabus assignments include reflection assignments and a final synthesis project integrated into the course.

7. There is an outlet to disseminate the original research (e.g., symposium, conference, scholarly article) integrated into the course.

College of Arts and Sciences

ANTH 314: Practicing Anthropology (3)
The applications of anthropological data, methods, and theory in the analysis and understanding of contemporary human problems. Outcome: Students will be able to demonstrate an understanding of cross-cultural differences in the experience of illness, curing and health; cultural meanings and practices involved in substance abuse; the role of culture in educational practice and learning; and the influence of culture in business and workplace settings.

BIOI 399: Bioinformatics Research (1-4)
An independent research experience involving laboratory experiments, computer program development, or statistical analysis or any combination of these performed under the mentorship of one or more Bioinformatics faculty members. Outcome: All students will acquire skills to perform and report on independent research and to be intellectually responsible for evaluating their own and related work. Other outcomes will include at least one of the following: Experimental expertise, statistical evaluation of data sets, design and use of computational tools.
BIOL 396: Research (3)
Laboratory or field research under faculty guidance emphasizing hypothesis testing, literature searches, experimental design, and use of appropriate techniques. Outcome: Students will learn the full set of research skills required in doing an independent project and reporting the results.

BIOL 397H: Senior Honors Thesis (3)
For students in the Honors Program. Laboratory or field research under faculty guidance emphasizing hypothesis testing, literature searches, experimental design, and use of appropriate techniques. Written thesis and research presentation required. Outcome: Students will learn the full set of research skills required in doing an independent project and reporting the results.

CHEM 300: Undergraduate Research (1-6)
This course gives undergraduate students an opportunity to participate in research in a selected area. Outcome: Students will accomplish the research task defined in the contractual arrangement between the student and the instructor.

COMP 312: Open Source Computing (3)
This course will cover the fundamentals of Free and Open Source software development. Topics to be addressed include licensing, Linux, typical software development tools, applications, and techniques for managing remote servers. Outcome: Students will learn to implement projects involving Free and Open Source software and learn how to participate in open-source projects effectively.

COMP 390: Computer Science Project (1-6)
Students do an independent or team-based computer science project approved and supervised by a faculty member. Outcome: Students produce a portfolio-quality work (e.g. a working software application or significant computing project). Students are expected to produce quality documentation and present their results as part of a department or class seminar series focused on student research and development projects.

COMP 398: Computer Science Independent Study
The student and a sponsoring faculty member will determine an advanced topic for the student to work on. Outcome: Knowledge of an advanced topic.

ENVS 391: Environmental Research (1-4)
Students may register for independent research on a topic mutually acceptable to the student and any professor in the department. Usually this research is directed to a particular course or to the research of the professor.

FNAR 392: Senior Thesis II: FNAR Art History Capstone (3)
The second half of the capstone experience for art history majors. In Senior Thesis II, students write an in-depth scholarly research paper. Outcome: Students produce a polished in-depth research paper. They demonstrate the ability to synthesize and apply ideas from scholarly sources; formulate, develop, and defend a thesis; and critically analyze and articulate in verbal and written form the issues and ideas relevant to their topic.
PHYS 126/126F: General Physics II and Freshman Projects (3 + 1)
A continuation of PHYS 125. Outcome: Understanding of electrostatics, magnetostatics, time varying currents, resistive, capacitative and inductive elements, electromagnetic and sound waves, geometrical and wave optics, introductory special relativity. Under the guidance of a faculty member, students carry out research in the area of mechanics, waves or thermodynamics. The project must involve submission of a proposal, building of a setup, carrying out related theoretical calculation followed by experimentation. Outcome: Students should get a deeper understanding of the material covered in PHYS 125 (mechanics, waves and thermodynamics) and also learn about research methods employed by physicists.

PHYS 391: Research (1-12)
Research in physics or an associated field. This is a variable credit course and can be repeated. Outcome: Under the guidance of a faculty member, students study and understand research methods employed by physicists and gain deeper understanding of a particular area of physics.

PSYC 370: Honors Research (3)
Students carry out the research proposed in PSYC 369 and prepare a formal report constituting the honors thesis. Approval of the thesis by the honors committee earns the psychology honors award. PSYC 370 is a capstone course. Outcomes: Students will conduct research, analyze and interpret data, and write a thesis.

PSYC 397: Independent Research (3)
Capstone opportunity to conduct research under the guidance of a psychology faculty member. Only one of PSYC 397 and 399 may count toward the psychology major. Outcomes: Students will gain experience in all aspects of psychological research, including literature review, formulating hypotheses, designing and conducting research, analyzing data and interpreting results, communicating the results of research in written reports.

PSYC 399: Special Studies in Psychology (1-3)
Opportunity for individual reading or research in a specialized area not otherwise covered by the department's course offerings. Only one of PSYC 397 and 399 may count toward the psychology major. Outcomes: Students will gain experience (e.g., integrating research results from various sources, conducting research) working directly with a faculty member on a current topic in psychology.

Center for Experiential Learning/Office of the Provost

UNIV 391: Seminar in Undergraduate Research Methods (3)
This seminar course offers undergraduate students the experiential opportunity to engage in research while building their foundation of research methods. Students may be part of the Loyola Undergraduate Research Opportunities Program (LUROP) through a funded fellowship, or students may be working independently with a faculty mentor (volunteering in a lab, working on a research team) All students must have a research project with a faculty mentor identified prior to enrolling in this course. As an experiential learning course, students will need to be engaging in research with a faculty mentor concurrently to taking this course. Students must work a minimum of 5 - 10 hours each week over the semester on their research projects (10 - 15 hours per week over the summer session). Students will reflect on research experience in the context of understanding research paradigms, application of research methodologies, understanding the implications of ethical research, and preparing to present research professionally. This course will provide students engaged in research with the opportunity to develop a formal written research paper and poster, as if the students are preparing to present their research in a professional setting, such as the LUROP Symposium.
School of Business Administration

BHNR 353: Research Practicum (3)
Restricted to students in the Business Honors Program.

ENTR 390: Entrepreneurship Strategies – Capstone (3)
This course prepares students for entry into the real business world either as a corporate entrepreneur or a new venture entrepreneur.

School of Communication

COMM 365: Naturalistic Methods in Communication Research (3)
This course examines how communication research is conducted in naturalistic settings using qualitative methods associated with observation and in-depth interviewing. Outcome: Students will become familiar with the reading and evaluation of communication research, and apply the concepts studied in class to the design and development of a research project.

COMM 368: Critical Ethnography in Communication (3)
This course teaches principles of participant-observation research as a critical practice to produce a 'thick description' of meanings, values, hierarchies of interests, power structures and ideals of a particular cultural group or community. Outcome: Students learn to conduct ethnographic research and its procedures, taking field notes, conducting interviews, examination of data and artifacts, and producing research results to a public audience.